CHAPTER

9

CREATING ANIMATION FOR THE WEB

Creating Animated GIFs

In this chapter, you will:

- Learn about animation
- Work with the Animation and Layers palettes
- Create GIF animations with ImageReady
- Optimize and save animations
- Use animation in a Web page

Animation is an optical illusion that you take advantage of every day. If objects had to move so that your eyes could see them as moving, there would be no film or television industry. Fortunately, when you look at sequences of still images you can perceive motion. For the purposes of this chapter, any Web-based motion is referred to as animation, whether it is cartoon-like or photographic.

You can use many file formats to create animation on the Web, but the most common is the GIF format. This chapter explains how to use ImageReady to create and use animated GIF images.

ImageReady, like most other Web animation programs, lets you create a sequence of images that appear as an animation when played in quick succession. However, ImageReady allows more control over the images than do many other tools, and offers additional features that make it easier to create animated GIF files. This means that ImageReady also has more options for you to understand and explore.

One of the most common uses for animation on the Web is in banner advertising. This chapter covers everything you must know to create and use animated GIFs, whether for advertising or other use.

Understanding Animation

Animation literally adds another dimension to Web graphics. Instead of having only three dimensions—width, height, and (color) depth—animation provides a fourth dimension of time. Several image formats support animation, but most require sophisticated authoring or programming and force the end user to play the animation in a special player or plug-in. The only format that supports animation and can be displayed in all browsers is the Graphics Interchange Format (GIF).

The following sections offer guidelines for using the illusion of animation, creating animated content, and creating animated GIFs.

Using the Illusion of Animation

Animation works because of a phenomenon called persistence of vision. When you view a quick succession of still images, persistence of vision makes you think you see motion. There is no real motion in an animation, film, video, or paper flip-book. In all cases, a set of static images is shown sequentially. If the sequential display of the images is fast enough, you experience the illusion of motion.

You can see an example of the illusion of motion by opening file 9-1.gif on your Data Disk in a Web browser. This animation has only two frames and lasts one second before repeating. Although it is simple, it does create the illusion that the red bar is flipping up and down, rotating around the lower-left end of the line. The only difference between this motion and the motion in video or film is the speed.

All animation media have a standard **frame rate**, measured in **frames per second**, or **fps**. Film has 24 frames for every second, but each frame is shown three times, making an effective frame rate of 72 fps. Partially to save film and partially because the equipment was not as sophisticated as today, moviemakers from the early part of the twentieth century used a frame rate of only 16 fps. This slow frame rate creates a jumpy quality and the motion is not smooth.

Video has 30 frames in each second, but each frame is divided into two fields, so the effective frame rate is 60 fps. When video is shown on the Web, it might have a frame rate as fast as 30 fps, although it is more common to cut the rate to 15 fps. This slow frame rate makes the frames flicker visibly during playback, but it also halves the memory and download time required to play video online.

Creating Animated Content

If you want sophisticated animations in your Web pages, you should use a video-creation program such as Adobe AfterEffects to generate QuickTime or Moving Picture Experts Group (MPEG) animations. You then can create video-quality animations at 30 frames per second, which is fast enough to show smooth motion with no flicker. While these

animations can be impressive, the file size is often at least one megabyte for a brief half-screen animation.

Animations this long are not practical on the Web, however. The time it takes to download a video with a file size of 1 MB will probably discourage users from viewing your work. Because of time and bandwidth constraints, you need to use animation files that can be downloaded quickly. The format of choice for Web animation is GIF. Unlike the JPEG and PNG formats, GIF supports animation. The main advantage of GIF animations over other formats is that it is the only one supported natively in all browsers. Every other animation format requires a plug-in or external player to view the animation.

Because GIF animations use bitmaps, longer animations result in larger file sizes. You should use GIF only for short, simple animations. If you want longer animations, create MPEG or QuickTime movies that download separately. Because GIF supports only 8-bit color, photographic images often appear banded. QuickTime and MPEG are good choices if you want photographic-quality video.

If you want more complex online animation that does not have to be downloaded separately, consider creating a vector-based animation such as a Flash movie. Because they are vector-based, Flash movies cannot be photorealistic. Flash animations have smaller file sizes and are faster to download than QuickTime movies.

ShockWave movies are similar to Flash movies, but can include complex interactivity. Similarly, Java applets can be very interactive, but require high levels of programming to create.

So, for Web animations, use animated GIFs. For slightly more complex animations, use a Flash Movie. If you need the animation to be interactive, consider using ShockWave or Java. For photorealistic movies, such as video clips, use QuickTime or MPEG. Table 9-1 details the comparative strengths of different Web animation formats.

Table 9-1 Comparison of Web animation formats

Format	Works without plug-in or special coding on all browsers	Supports sound	Interactive	Supports high-color photographic video animation
GIF	Yes	No	No	No
QuickTime	No	Yes	No	Yes
MPEG	No	Yes	No	Yes
Flash	No	Yes	No	No
ShockWave	No	Yes	Yes	No
Java	No	Yes	Yes	No

If none of these formats suits your needs, consider streaming video. Streaming video formats, such as those available for RealMedia's RealPlayer and the Microsoft Windows

Media Player, have all of the features and advantages of a QuickTime or MPEG movie, but can be played before they are completely downloaded. Normally, a large video or animation clip, such as a QuickTime movie, must be downloaded completely before you can play it. Streaming audio and video allows you to start playing the file before it has finished downloading. It uses a **buffer** of a few seconds which causes the playback to lag behind the download. If the playback catches up to the data currently downloading, the stream ceases and the playback pauses until more of the file has downloaded.

Most of these sophisticated and streaming video animation formats and their creation are specialized subjects, requiring books and classes of their own. Some people devote their entire careers to specific formats such as Flash or streaming video.

Because GIFs are the most common animation format, the rest of this chapter covers creating animated GIFs.

Creating Animated GIFs

Animated GIFs have several advantages over other animation formats. They require no special coding, are supported by all browsers without requiring a plug-in, and support transparency. The restrictions of animated GIFs are that they cannot be interactive, other than being used as a button users can click like any other Web graphic, and they cannot include sound.

An animated GIF image is like any other GIF image except that one animated GIF file contains multiple individual GIF images, which then are displayed in order like a slide show. Each image includes information about how long it should play before the next image is shown. The file also includes information about whether to repeat the sequence after the last frame is displayed, and if so, how many times.

The specification for animating GIF images is called GIF89a, but you do not need to refer to the exact name when creating animated GIFs or using them in Web pages. You can just use the .gif file extension as you would with any GIF image.

Unlike almost everything else related to the Web, the specifications for animated GIFs have not changed in over 10 years. The new programs that create animated GIFs have the same basic functions as GIF animation programs from the mid-1990s. The ImageReady interface makes creating animated GIFs easier than some other tools, but the final product is the same.

This chapter assumes you are using ImageReady for the exercises. However, you can use many other freeware and commercial applications instead of ImageReady to create animated GIFs.

Working with the Animations and Layers Palettes

When creating animated images, ImageReady is not as intuitive as other animation programs. Most tools work by taking a set of images you have created, and then converting

them into an animated GIF. ImageReady also uses this basic approach, but in addition lets you insert different images or modify single images over multiple frames. There is no limit to the number of frames in an animated GIF.

Creating animated GIFs in ImageReady requires using the Animation palette and the Layers palette. Both can be tricky to work with because you must always be aware of which frames and layers are selected. The Animation palette shows each frame in the animation in sequence from left to right. The Layers palette shows all the actual and potential image information in any of the frames. The use of layers differentiates ImageReady from many other GIF animation programs.

Like any other image composed in ImageReady, an animation can contain multiple layers, each of which can be moved and edited independently of the other layers. By default, any image opened or created in ImageReady is treated as an animation with only one frame, which is one way to describe a static image. As soon as you have at least two frames, the static image becomes an animation.

Using the Animation Palette

In the Animation palette, shown in Figure 9-1, you can add, delete, and modify frames. When you open any image in ImageReady, it is automatically displayed as the initial frame of an animation in the Animation palette.

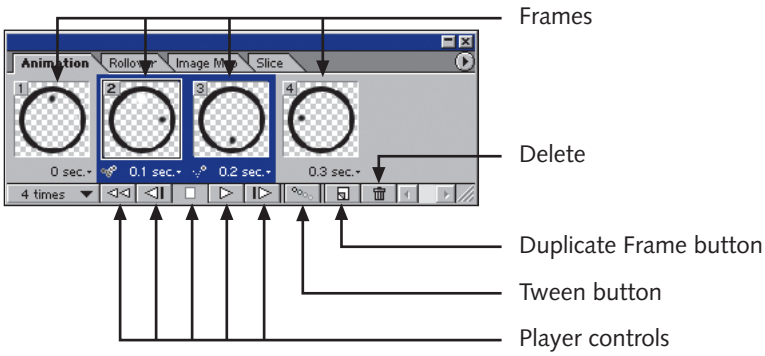

Figure 9-1 The Animation palette

To create a simple animation with the Animation palette:

1. In ImageReady, open the file named **snowman.gif** from the Data Disk.
2. If necessary, show the Animation palette by clicking **Window** on the menu bar, and then clicking **Show Animation**.
3. Add a frame by clicking the **Duplicate Frame** button at the bottom of the Animation palette, or by selecting **New Frame** from the Animation palette

menu. The new frame is added after the selected frame and retains all the properties of the selected frame.

4. Select the **new frame** in the Animation palette. The current frame opens in the Image window, and is indicated by a narrow white border around the frame. You can select multiple frames by holding down the Shift key or the Command key (Ctrl key in Windows) and clicking the other frames. Selected frames are indicated by a blue highlight around the frame in the Animation palette. When multiple frames are selected, only the current frame appears in the document window. Figure 9-2 shows selected frames in the Animation palette.

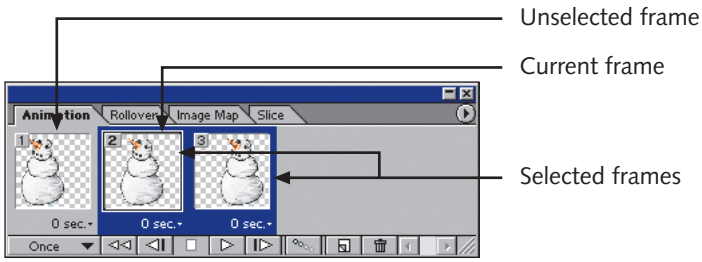

Figure 9-2 Selected frames in the Animation palette

5. Modify the duplicated frame. Use the Move tool to drag the image a few pixels to the right in the document window. Now each of the two frames shows a slightly different version of the same image.
6. Rearrange the frames by dragging them within the Animation palette.
7. Reverse the sequence of the frames by selecting multiple frames and selecting **Reverse Frames** from the Animation palette menu.
8. Add a third frame, and then delete it by selecting **Delete Frame** from the Animation palette menu, clicking the **trash can icon**, or dragging the **frame** to the **trash can icon**.
9. Click **File** on the menu bar, and then click **Save Optimized As** to save the animation to your Chapter 9 project folder as **snowman.gif**.

Choosing All from the Select menu selects all of the pixels in the image area, not all of the frames in the Animation palette.

Copying and Pasting Frames

Duplicating a frame creates a new frame that shows the same layers as the original frame. Copying and pasting a frame creates a new frame and also duplicates all the layers shown in the original frame. To copy and paste frames, select Copy Frame and Paste Frame from the Animation palette menu. When you use the Paste Frame option, you have a number of options:

- **Replace Frames** deletes the currently selected frame and replaces it with the copied frame.
- **Paste Over Selection** does not add or replace any frames. This option adds the copied layers to the currently selected frame.
- **Paste Before Selection** and **Paste After Selection** add a new frame with copied layers either before or after the selected frame.

You can delete an entire animation by selecting Delete Animation from the Animation palette menu. While this removes all but the first frame, it leaves all layers intact.

Playing Animations

The Animation palette contains playback buttons similar to those on any media device, as shown in Figure 9-3. Use these buttons to play the animation, which appears in the Image window. You also can stop the animation, step forward or backward a frame at a time, or rewind to the first frame. The animation plays at the speed determined by the delay settings for each frame. Timing of playback is covered in the next section.

You also can preview animations in a browser. This is recommended, as not all animation features work properly when previewed in ImageReady.

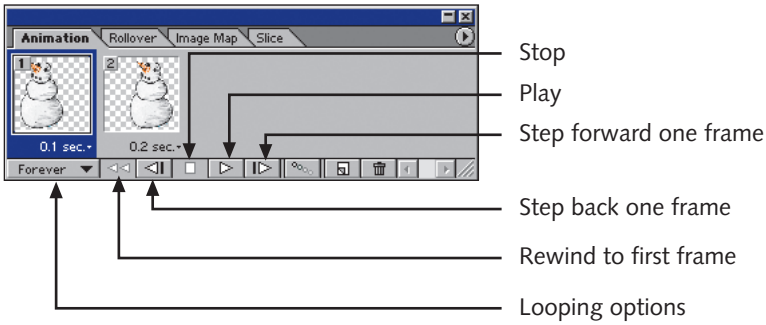

Figure 9-3 Player controls in the Animation palette

To preview an animation:

1. With snowman.gif still open, click the **Looping Options** list arrow, and then click **Forever**.

2. Click the **Play** button in the Animation palette. Note that each frame is selected in turn in the Animation palette as it appears in the Image window.
3. Click the **Stop** button to pause the playback.
4. To preview an animation in a Web browser, click the **Preview in Default Browser** button in the toolbox, shown in Figure 9-4. Alternately, click **File** on the menu bar, click **Preview In**, and then click the browser you want to use.
5. Click the **Stop** button in the browser or press **Esc** to stop the animation.
6. Click the **Refresh** or **Reload** button to begin playing the animation again.
7. Close the browser.

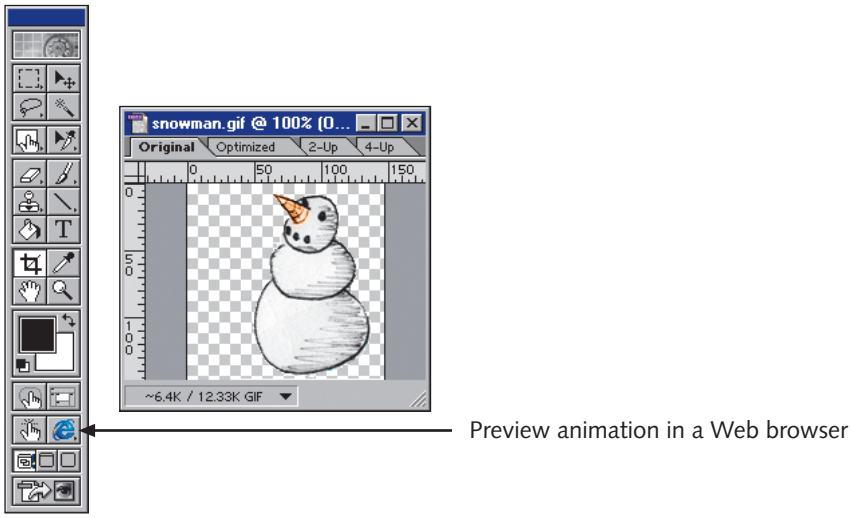

Figure 9-4 The Preview in Default Browser button

Previewing in a browser is important as the browser shows the true playback speed and transparency. The browser preview also shows the HTML code necessary to use an animation in a Web page. A sample preview window is shown in Figure 9-5.

Although you can view an animation file in Photoshop, you cannot see the animation. View animations in Photoshop to take advantage of filters or other tools not available in ImageReady, such as the Add Noise filter or Gradient tool. One task you can perform in Photoshop is editing individual layers. However, you should avoid adding or rearranging layers because this might ruin some of the animation effects when you view the animation later in ImageReady.

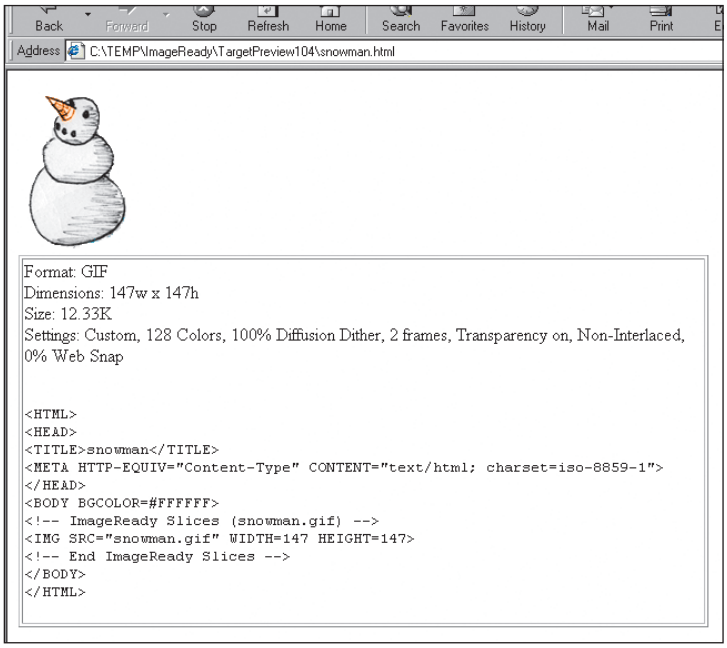

Figure 9-5 Previewing an animation in a Web browser

Using the Layers Palette

When creating animated GIFs in ImageReady, you do all of your work in the Animation and Layers palettes. Each frame in the animation is represented by one frame in the Animation palette. Each frame also has a number of layers associated with it, indicated by the visibility icons in the left column of the Layers palette, as shown in Figure 9-6. A layer, as defined in the Creating and Using Background Images chapter, is part of an image that can be moved in front of or behind other layers like sheets of clear plastic. When creating an animation, you can have multiple layers but only one frame, and you can have multiple frames but only one layer. A frame can include all the layers in an image, some of the layers, or no layers. Different frames can display the same layers.

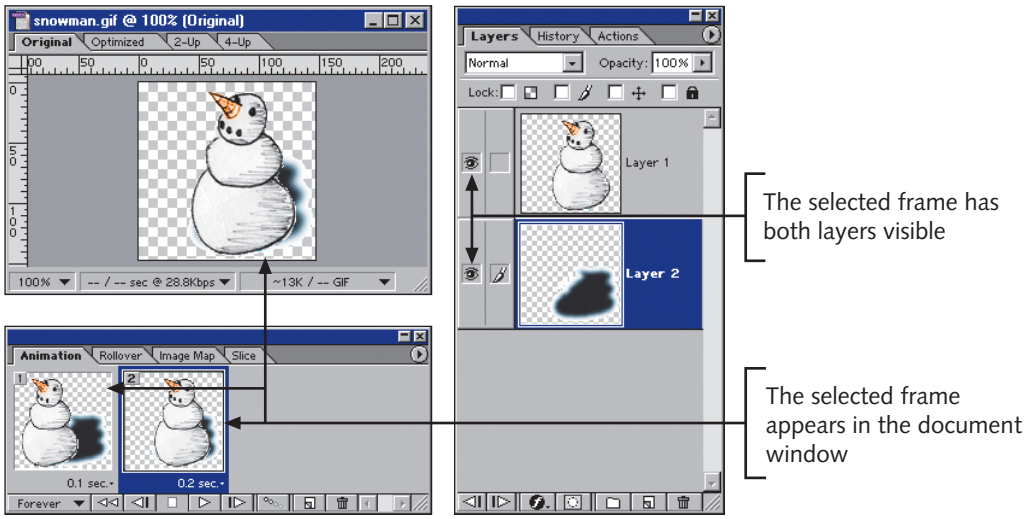

Figure 9-6 The Layers palette in ImageReady

Adding Layers

You often need to animate a specific element in an animation while keeping the background motionless. To do this, you need to place the moving element in a separate layer. When you add a layer to the Layers palette, the layer becomes visible in all frames in the animation.

To add a layer:

1. With snowman.gif still open, move the **snowman** in the second frame so it matches the position of the snowman in the first frame.
2. Select **Add Layer To New Frames** from the Animation palette menu. This causes ImageReady to automatically create a new layer for any frame you create.
3. Open **shadow.gif** from the Data Disk.
4. Select **All** from the Select menu and press Command + C (**Ctrl+C** for Windows) to copy the selected area.
5. Paste the selection into **snowman.gif**. A new layer is created for the shadow.
6. In the Layers palette, drag the **shadow** layer below the layer containing the snowman. Your work environment should resemble that shown in Figure 9-6.

Changing the Visibility of Layers

When you duplicate frames, all the aspects of the original frame are retained in the new frame, including which layers are visible. To control which layers are visible for a particular frame, first select the frame in the Animation palette, and then select and deselect the visibility icons in the Layers palette.

To change the visibility of layers of frames in ImageReady:

1. With snowman.gif still open, select the **second frame** in the Animation palette. In the Layers palette, deselect the **eye icon** next to the layer containing the shadow to make the shadow invisible.
2. Click the **Next Frame** button in the Animation palette to step through the animation sequence two or three times. The first frame of the animation contains the shadow and the second does not. As you play the animation, the shadow will blink on and off, and the visibility icon next to the shadow layer will turn on and off accordingly.

Figure 9-7 shows the Animation and Layers palette with visibility disabled for one layer.

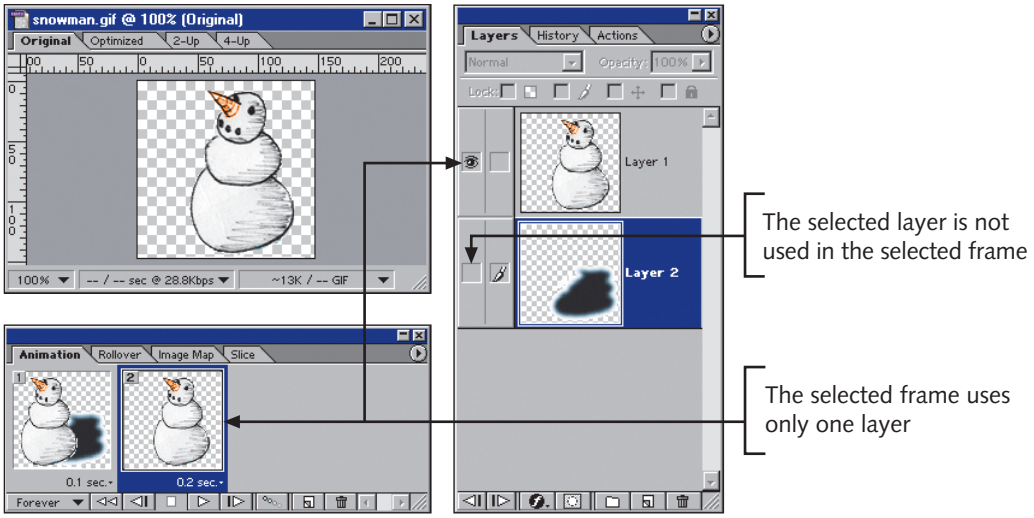

Figure 9-7 Disabled visibility

Editing Layers

The key to creating animations with ImageReady is editing the layers in the Layers palette so that they change from one frame to the next. If the layers did not change, every frame in the animation would be identical.

At any time while editing an animation sequence, you will have one or more frames selected, and only one layer selected. Whenever you select a layer, it becomes visible in the selected frames. When editing a layer, your edits might affect only the current frame or a group of frames. Frame-specific changes affect only the current frame, even if other frames also show the layer. Adjusting a layer's opacity, position, or style changes those options for only the selected frame. Other frames that show the same layer do not register these edits. This allows you to animate single layers that change over time.

Global changes, however, affect all frames in an animation. These include any color changes, filters, type, and most other edits. All frames that show the layer will show global changes whether the frames are selected at the time or not.

To edit animation layers in ImageReady:

1. With snowman.gif still open, make both layers visible for both frames.
2. Select the **second frame**. Select the layer containing the shadow and set the opacity to **50%** in the Layers palette.
3. Step through the animation. The layer changes opacity across frames. This is a frame-specific edit.
4. Select the **Paintbrush** tool and set the foreground color to **black**, if necessary. In the layer containing the snowman, add **three coal buttons** to the front center of the snowman. This is a global change and affects all frames that display this layer.
5. Click **File** on the menu bar, click **Save Optimized As** to save the animation to your Chapter 9 project folder as **snowman.gif**, and then close snowman.gif and shadow.gif.

Figure 9-8 shows the Animation and Layers palette with these new changes.

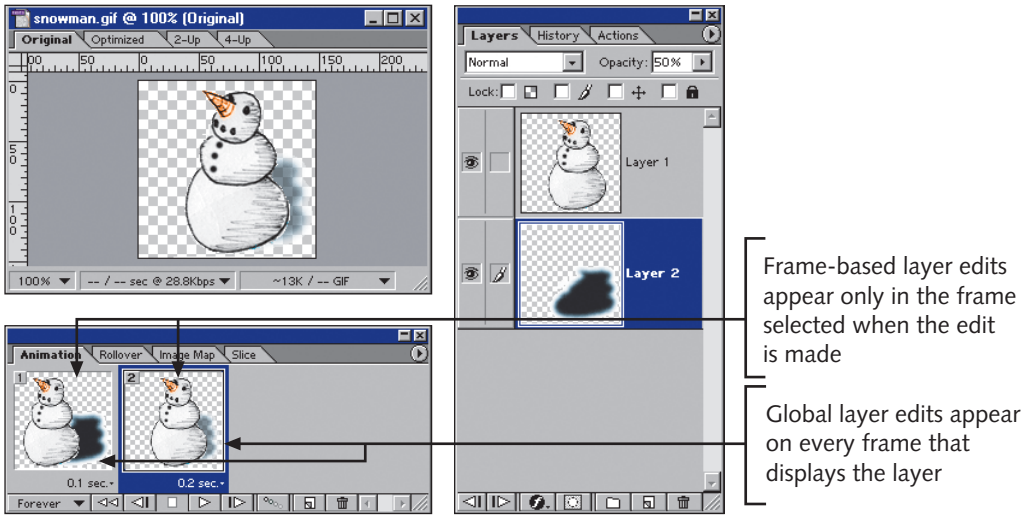

Figure 9-8 Global and frame-based changes

Editing Existing Animations

A good way to practice using the different animation features of ImageReady is to open and edit existing files. You can edit animated GIFs, QuickTime movies, and Photoshop images with multiple layers.

To open an animated GIF, click File on the menu bar and then click Open. The animation opens with a set of frames and layers where each layer corresponds to one frame. The visibility for all layers is turned off except for the corresponding frame, as shown in Figure 9-9. Frame 1 uses only the first layer, frame 2 uses only the second layer, and so on.

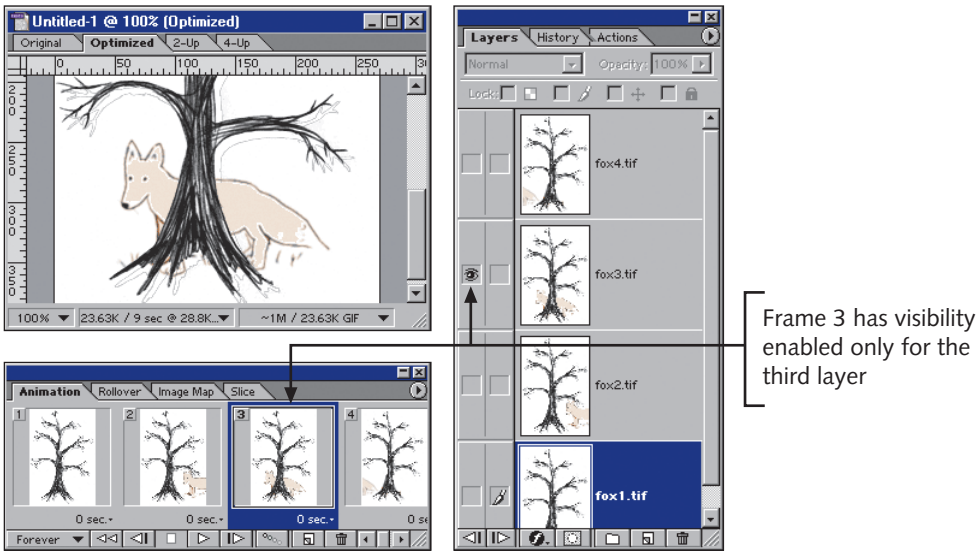

Figure 9-9 Selective visibility for individual frames

You also can create animated GIFs from Photoshop images that have multiple layers. In this situation, the Animation palette shows only one frame and the Layers palette shows all the layers or individual images. To convert these layers to animation frames, select Make Frames From Layers in the Animation palette menu. This creates one frame for each layer in the Layers menu, using the bottom layer as the first frame.

Additionally, you can create animations from folders of individual images. The images can be in any format. To import a folder of separate images, first place all the images for the animation in a folder. The images will be inserted into the Animation palette in alphabetical order, so name the images accordingly. You will get better results if the images are already sized identically. If the source images are of different sizes, the dimensions of the animation will be based on the dimensions of the first frame, and all other frames will be cropped or padded accordingly.

To import a folder of separate images:

1. In ImageReady, click **File** on the menu bar, point to **Import**, and then click **Folder as Frames**. Find and select the folder named **fox** on the Data Disk. Four image files are opened, appearing as four separate layers in the Layers palette. Four frames also are generated in the Animation palette, with each frame corresponding to one layer.

2. Step through the animation, noting the visibility icons in the Layers palette. For each frame, all layers are invisible except the associated layer.
3. Click **File** on the menu bar, and then click **Save Optimized As** to save the animation to your Chapter 9 project folder as **foxy.gif**.

Creating Animations with ImageReady

Many programs can create GIF animation files. Most of these programs work by importing a folder of discrete files, as described in the previous section. ImageReady also allows you to create an animation from a single image file. To do so, duplicate the original frame and make frame-based changes to each new frame.

Whether you use ImageReady or another program, GIF animation allows you to set the duration of frames and to set how often the animation repeats.

Controlling the Timing of Animations

What makes animations different from static images is that an animation contains multiple images, appearing as separate frames. For each frame, you can adjust how long the images appear. Showing each frame for a few seconds creates a slide show; showing each frame for a fraction of a second creates the illusion of motion. Animated GIFs differ from traditional animations in how they are timed. Film and video are time-based and have strict frame rates that dictate how many frames are displayed in a second, and each frame appears only once.

In contrast, GIF animation is frame-based—each frame can appear for a different duration. The length of a GIF animation is set not only by the number of frames, but also by the display duration of each frame and the number of times the frame sequence repeats. For example, a two-frame animation where each frame appears for half a second creates a one-second animation. Adding two more frames and lengthening the display duration to one second per frame creates a four-second animation.

Adjusting the Delay

Film and video use a standard frame rate that affects all frames equally. Each frame of film appears on the screen for $\frac{1}{24}$ of a second, and each frame of video appears for $\frac{1}{30}$ of a second. Unlike film and video, the frames of a GIF animation can each have a different display time. You could set one frame to appear for $\frac{1}{100}$ of a second and another frame to appear for a few minutes.

The delay setting for each frame appears at the bottom of the frame below the thumbnail image in the Animation palette. Times are listed in seconds and fractions of seconds, which are shown as decimals. Select a frame or set of frames and click the delay value under one of the frames to open the Frame Delay menu, shown in Figure 9-10. The current delay time appears at the bottom of the list.

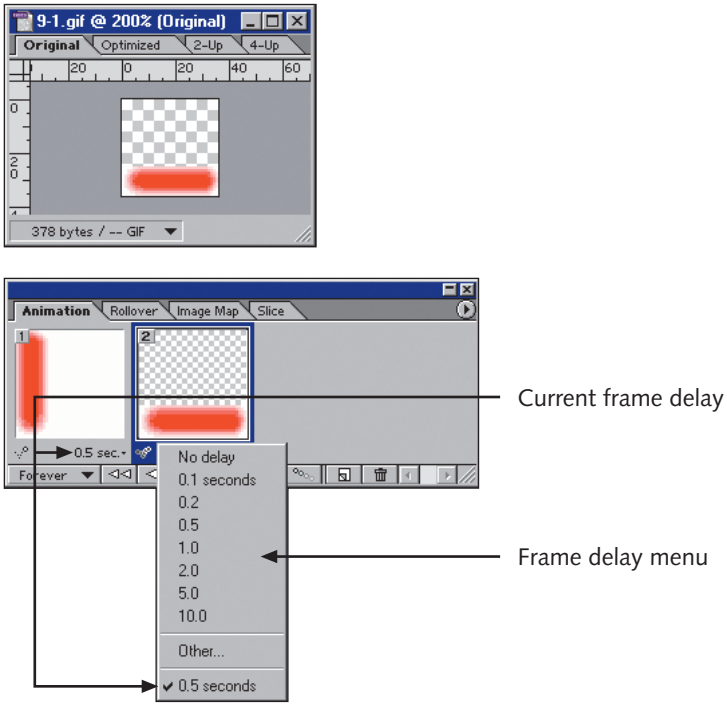

Figure 9-10 Changing the frame delay

To change the frame delay:

1. Open **9-1.gif** from the Data Disk.
2. Click the **delay value** below frame 1 in the Animation palette. This displays the Frame Delay shortcut menu.
3. Click **5.0** to set the delay to five seconds. This corresponds to the length of time you want frame 1 to appear. You can select one of the preset times, No Delay, or Other to open the Set Frame Delay dialog box where you can enter another time.
4. Set the delay of the second frame to **2.0** seconds. Each frame in an animation can have a different delay.
5. Play the animation. The delay is so long that there is no appearance of motion.
6. Click **File** on the menu bar, and then click **Save Optimized As** to save the animation to your Chapter 9 project folder as **9-1a.gif**, and then close the image.

Delay times are set in increments of 1/100 of a second. The longest possible delay is 240 seconds, which equals four minutes. You seldom need to use such a long delay.

You could set each frame to delay for 0.03 seconds, which would result in a frame rate of 30 frames per second—equal to the frame rate for video. In this way, you can simulate standard video using GIF animation. However, to display even one second of video this way requires using an enormous file that would take a long time to download.

The shortest delay possible is No Delay. This means the computer displays the animation as quickly as it can. The speed of the playback then depends on the memory and processor speed of the computer on which it is played, rather than on your settings. If you choose this option, be aware that the playback you see on your computer does not always match what others see on their computers. If your computer is slow, the animation might play at an appropriate speed. But when a user views the animation in a Web page on a fast computer, it will play too fast.

You should always preview your animations in a Web browser. The delay times may not be accurate when viewing them in ImageReady.

Adjusting the Number of Loops

You can set the animation so that the sequence of frames plays only once, repeats indefinitely, or repeats for a set number of times.

Specify the looping of the animation by clicking the Looping list arrow in the lower-left corner of the Animation palette, as shown in Figure 9-11.

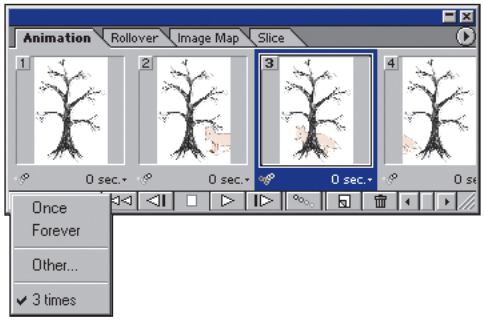

Figure 9-11 Looping options

Select Once to play the animation only one time. When finished, the last frame remains on-screen like a static image. Select Forever to repeat the animation indefinitely. In a Web browser, the animation will loop until someone clicks the browser's Stop button. Select Other to open the Set Loop Count dialog box. Enter the number of times you want the animation to repeat. The number of loops does not affect the size of the animation file.

The looping feature affects the entire animation—if you set the animation to loop once, it plays the entire sequence, from the first frame to the last, and then starts again with the first frame. Looping does not repeat individual frames or groups of frames within the sequence. To repeat frames within an animation, duplicate the frames and drag them

to the proper position in the sequence. Although the information is duplicated, this still increases the animation file size.

To change the frame delay:

1. Open **foxy.gif** if it is not still open.
2. Click the **Looping** list arrow in the lower-left corner of the Animation palette, and select **Other**.
3. In the Set Loop Count dialog box, type **3** to specify that you want to play the animation three times and then stop.
4. Play the animation. It should cycle through three times, and then stop on the last frame.
5. Click **File** on the menu bar, and then click **Save Optimized As** to save the animation to your Chapter 9 project folder as **foxy_a.gif**, and then close the animation.

Using Frame Animation

The simplest type of GIF animation uses one image for each frame. In ImageReady, this is represented by a sequence of frames and a stack of layers where each frame corresponds to one layer and vice-versa. You can see this whenever you open an animated GIF in ImageReady.

Although the final animation will resemble a simple frame animation, with a different layer for each frame, you can reuse layers across multiple frames. You can create an entire animation out of a single layer by changing the position, opacity, or effects of the layer across multiple frames.

To create an animation using a single layer:

1. In ImageReady, open **ball.gif** from the Data Disk. This file contains one frame in the Animation palette and one layer in the Layers palette. Figure 9-12 shows the appearance of the Animation and Layers palettes.
2. In the Animation palette menu, deselect **Add Layer To New Frames**. You do not need any additional layers.
3. Click the **Animation palette menu arrow**, and click **Copy Frame**.
4. Click the **menu arrow** again, and choose **Paste Frame**. In the Paste Frames dialog box, click the **Paste After Selection** option button. Repeat this step to duplicate the frame. You should have three identical frames, but only one layer in the Layers palette.

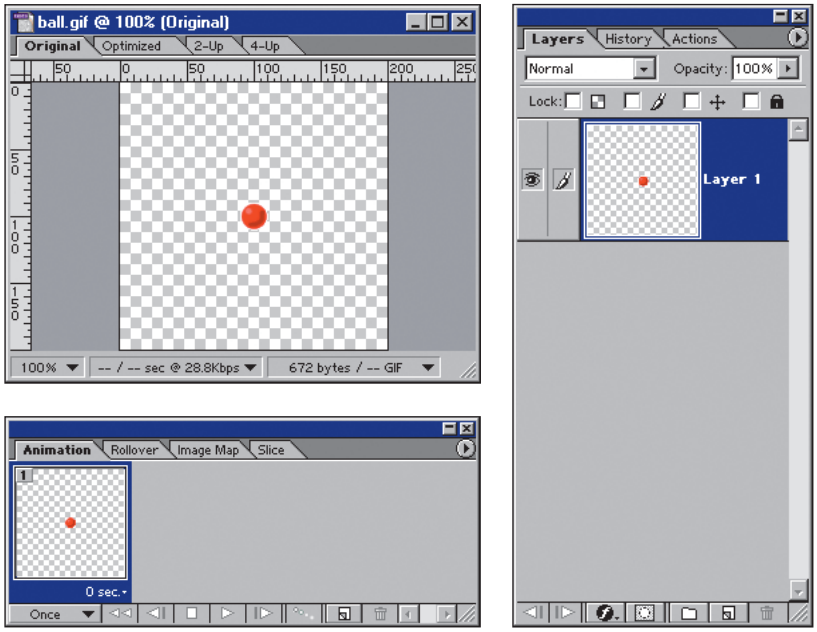

Figure 9-12 The Animation and Layers palettes before frame animation

5. Select the **first frame**, and then use the Move tool to drag the **ball** in the Image window to the top edge of the image area. This does not affect the position of the layer in the other frames.
6. Select the **third frame** and drag the **ball** to the bottom edge of the image area.
7. Select the **second frame** and drag the **ball** to about one-third from the bottom edge of the image area.
8. Duplicate the second frame, and then drag the **new frame** to the right of the Animation palette. The Animation palette should look like the one in Figure 9-13.
9. Click the **Play** button to see the ball bounce up and down in the image area.
10. Select the **first frame** again and set the opacity of the layer to **33%** in the Layers palette.
11. Select the **second** and **fourth frames** and set the opacity to **67%**.

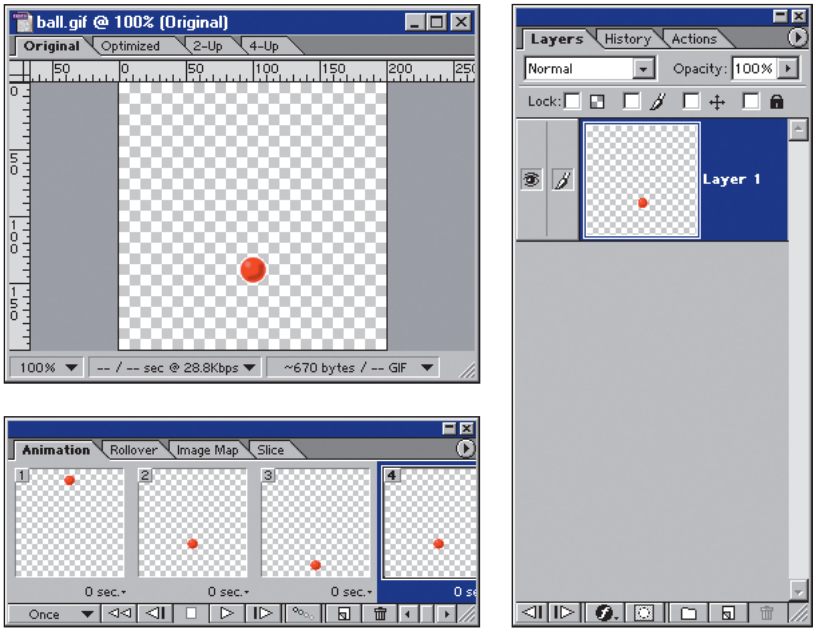

Figure 9-13 The Animation palette during frame animation

12. Click the **Play** button again to see the object fade in as it moves through the image area. The Animation palette should look like the one in Figure 9-14.

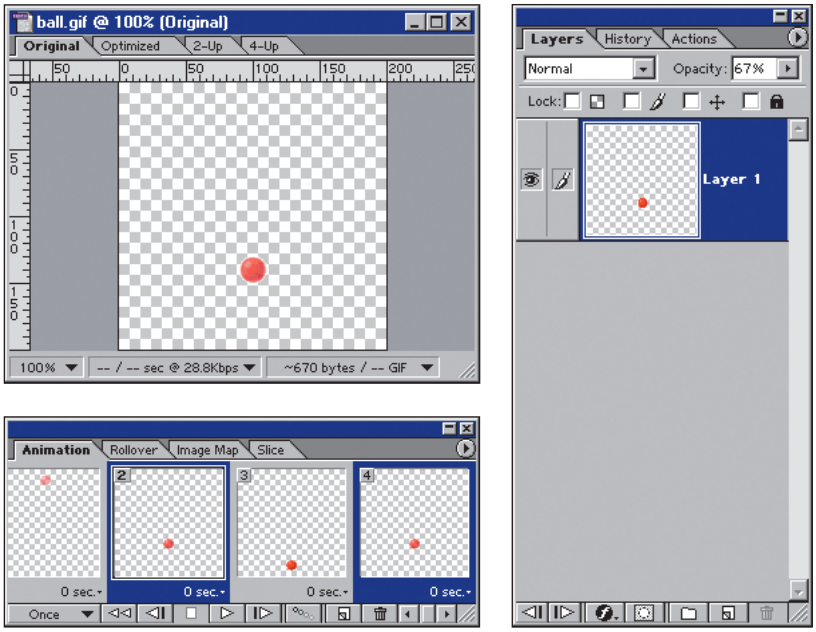

Figure 9-14 The Animation palette after frame animation

13. Click **File** on the menu bar, then click **Save Optimized As** to save the animation to your Chapter 9 project folder as **bounce.gif**, and then close the animation.

You can move single layers, or adjust opacity for single frames, but you cannot transform (scale, rotate, etc.) a layer without affecting every frame that calls it.

Tweening

Just as you manually modified position and opacity of a single layer across frames in the previous example, you can automatically modify multiple layers across frames with the **Tween** command. Tween is short for "in betweening," which is creating the intermediary frames that appear between two existing frames. For example, instead of having to manually position a layer and set the opacity for every frame, you can save time by making the adjustments for just the first and last frame and have ImageReady calculate the necessary frames between the first and last.

Use the Tween command to add or modify frames between two existing frames. Then set the position, opacity, or effect of the tweened frames to create the appearance of movement. For example, if you want to fade out a layer, set the opacity of the layer in the first frame to 100%; then set the opacity of the same layer in the last frame to 0%. When you tween between the two frames, the opacity of the layer is reduced evenly across the new frames.

The two existing frames are called **keyframes**, and act as reference points for the tweened frames. For example, you use tweened frames to fade out from one existing frame and then fade in to the next. You can apply the Tween command to a single frame, a set of frames, or any pair of adjacent frames. You also can tween the last and first frame, which are considered adjacent since the first frame follows the last frame when the animation loops. You cannot tween nonadjacent frames.

Tweening takes all the layer settings of the two keyframes and creates new frames between the keyframes, using an average of the keyframe settings. The new frames take the delay setting of the earlier frame. See Figure 9-15 for an example of tweening. In frame 1, the purple ball is at 50% opacity and is in the upper-left of the image. The black ball is at 100% opacity and is near the lower-left of the image. In frame 4, the balls are in opposite corners and their opacities have changed. Frames 1 and 4 are the keyframes. Frames 2 and 3 are tweened between the keyframes and modify the layers to show the intermediate positions and opacities of the layers. If one frame uses a layer with 100% opacity, and the next frame uses a different layer with 100% opacity, a tweened frame would use both layers at 50% opacity.

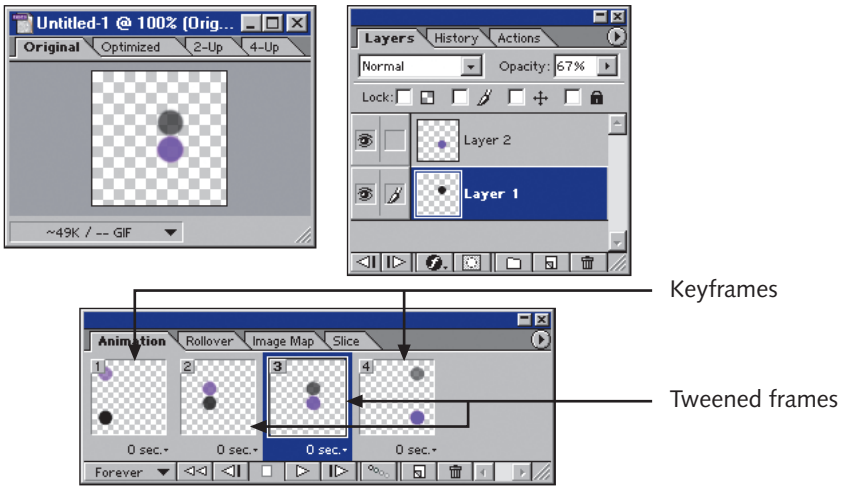

Figure 9-15 Tweening

Tweening adds frames to the animation, and increases the file size accordingly. Once you add frames by tweening, you can edit them like any other frames.

To use the Tween command:

1. In ImageReady, open **ball.gif** from the Data Disk.
2. Duplicate the frame in the Animation palette.
3. In the first frame, position the ball in the upper-left. In the second frame, position the ball in the lower-right. These are your keyframes.
4. Click the **Tween** button in the Animation palette or select **Tween** from the Animation palette menu. The Tween dialog box opens, as shown in Figure 9-16.
5. Make sure the All Layers option button is selected to include all layers visible in the keyframes. You also could click the Selected Layer option button to include only the currently selected layer. As there is only one layer, the choice does not matter here.
6. Make sure the Position, Opacity, and Effects boxes are checked. Selecting Position changes the position of layers across frames. Selecting Opacity fades layers in or out across frames. Selecting Effects has layer styles fade in or out. Here, only the position of the layer changes between the two frames, so tweening the opacity and effects will not affect the animation.
7. The Tween With text box can show First Frame or Previous Frame. In general, use this option to select whether to use the preceding or following frame as the other keyframe. If you already have both frames selected, you will not be given a choice here.

8. For Frames to Add, enter **3** to indicate the number of frames you want created between the selected keyframes.
9. Play the animation. You see the ball move smoothly from one corner to the other.
10. Click **File** on the menu bar, and then click **Save Optimized As** to save the animation to your Chapter 9 project folder as **bounce2.gif**, and then close the animation.

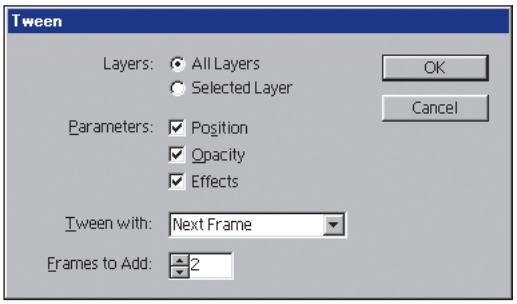

Figure 9-16 The Tween dialog box

Optimizing and Saving Animations

Animated GIF images are effectively multiple images in one file. An animation's file size can easily be several times larger than a similar static image with the same dimensions and color depth. Just as you can optimize a Web graphic by reducing extraneous colors from the color table, you also can optimize animated GIF images by reducing extraneous information that affects the animation. It is as important to optimize animated images as it is to optimize static ones, perhaps more so because animated image files can become very large. You can optimize animated GIF images the same way as normal GIFs, and use additional options specific to animations, including setting the frame disposal method and using the Bounding Box option.

Setting the Frame Disposal Method

When an animation plays, each frame appears in succession. The new frame either completely replaces the previous frame, or it covers only part of it so that other parts of the previous frame show through. Hold down the Ctrl key and click a frame (right-click in Windows) to display the Disposal Method shortcut menu, as shown in Figure 9-17. Here you can set an option called the **frame disposal method** for each frame. An icon under the frame indicates the method chosen for that frame. Select a disposal method when working with layers that include transparency. This specifies whether the current frame will be visible through the transparent areas of the following frames.

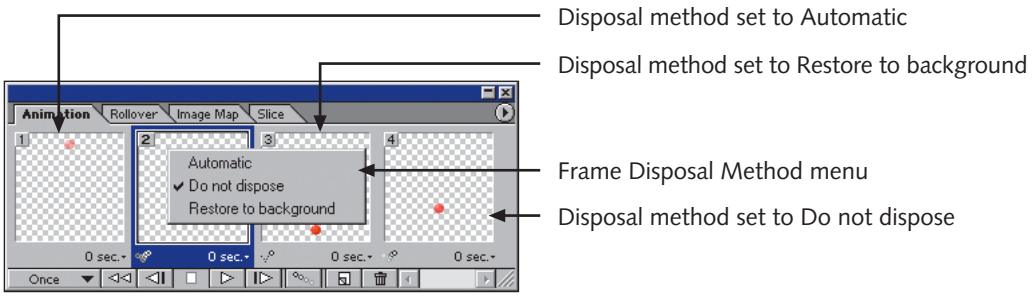

Figure 9-17 The Disposal Method shortcut menu

You can set the frame disposal method either to Restore to Background or to Do Not Dispose. In the first case, the new frame completely replaces the old one. In the second case, the new frame covers only part of the previous frame, allowing areas of the previous frame to show through the transparent areas of the new frame. Completely restoring frames results in larger files because the animation requires a full-size area for each frame. Choosing Do Not Dispose allows the animation to reuse parts of previous frames. This can result in smaller files.

In ImageReady you also can set the disposal method to Automatic, which finds the best combination of disposing and not disposing. You create the smallest files when not disposing frames, slightly larger files with the automatic method, and still larger files when restoring every frame. The drawback to not disposing frames is that information from previous frames might show through. The Automatic setting is required for the automated optimization in ImageReady.

To choose a disposal method, select one or more frames. Hold down the Ctrl key and click the frame for which you want to set a disposal method (right-click in Windows). You see the Disposal Method shortcut menu. Select one of the three options according to the following descriptions:

- The **Automatic** method disposes of the current frame if the next frame contains transparency, and keeps the current frame if the next layer is completely opaque. For most animations, this method produces good results.
- The **Do Not Dispose** method keeps the current frame and displays it through the transparent areas of the next frame.
- The **Restore to Background** method disposes of the current frame and displays the next frame over the background color.

To set the disposal method:

1. Open **ball.gif** from the Data Disk.
2. Duplicate the frame. Position the ball on the left in **frame 1** and position it on the right in **frame 2**.

3. Open the **Disposal Method context menu** for frame 1 (Ctrl+click in Mac, right-click in Windows).
4. Set the disposal method to **Do not dispose**.
5. Play the animation in ImageReady. You should not see any difference between the two frames.
6. Preview the animation in a browser. You should see the ball stay in place on the left and blink on and off on the right. The first frame is not disposed, and remains visible even when the next frame is shown.
7. Set the disposal method for the first frame to **Restore to background**. Set the disposal method for the second frame to **Do not dispose**.
8. Preview the animation in a browser. Each frame should appear in turn. Although the last frame is set to Do not dispose, all frames are disposed at the end of a loop, leaving an empty background when frame 1 appears again.
9. Make sure the Transparency box is checked in the Optimize palette, click **File** on the menu bar, and then click **Save Optimized As** to save the animation to your Chapter 9 project folder as **bounce3.gif**.

To take advantage of the different disposal types, use transparency when possible, and use only opaque pixels for new information and for blocking pixels in previous frames. For example, in Figure 9-18 you can see that in the second frame, eveything is transparent except for the new information and a small area that masks the information from the previous frame.

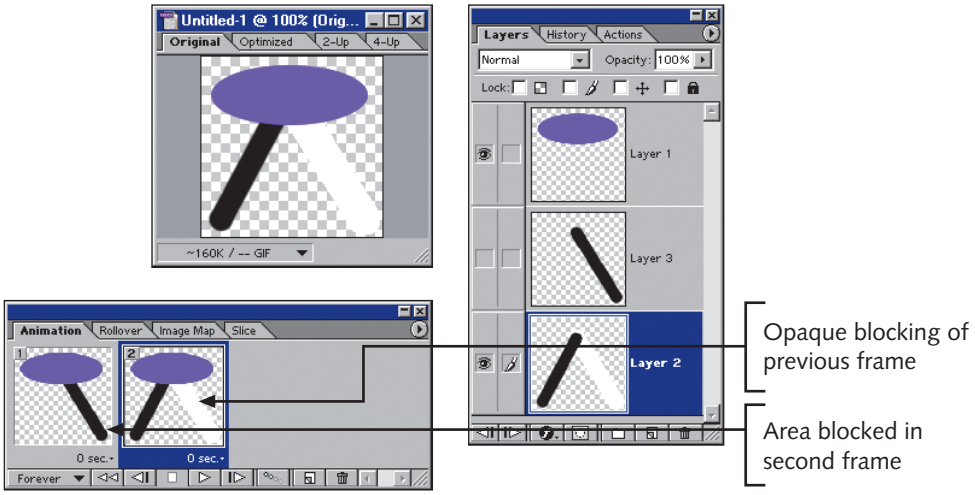

Figure 9-18 Blocking areas in layers

ImageReady does not show the results of not disposing of the frames. You must preview the animation in a browser to see how it is affected.

Optimizing Animations

You can optimize the layers of an animation the same way you would optimize any other image—by adjusting the settings in the Optimize palette to reduce colors or to set compression. You can also optimize frames to include only the areas that change between frames.

To optimize an animated image:

1. Open **bounce3.gif** if it is not still open.
2. In the Optimize palette, select the setting named **GIF 32 Dithered**.
3. From the Animation palette window, select **Optimize Animation**. This opens the Optimize Animation dialog box, as shown in Figure 9-19.
4. In the Optimize Animation dialog box that appears, check both the **Bounding Box** and the **Redundant Pixel Removal box**.
5. Click **File** on the menu bar, and then click **Save Optimized As** to save the animation to your Chapter 9 project folder as **bounce3a.gif**.

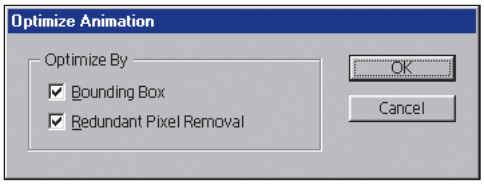

Figure 9-19 The Optimize Animation dialog box

Selecting the Bounding Box option trims each frame to the area that is different from the previous frame, and then displays a background color in place of the similar pixels. This helps reduce the file size of the finished animation. You can see the bounding box of an image by selecting the Move tool, and then selecting Show Bounding Box in the Options bar. You see a dashed line around the foreground pixels in an image. The bounding box is shown in Figure 9-20.

The Redundant Pixel Removal option takes all pixels that are identical between frames and makes them transparent. The frame disposal method must be set to Automatic for this option to have an effect. Removing redundant pixels eliminates unnecessary image data from the animation, creating a smaller file.

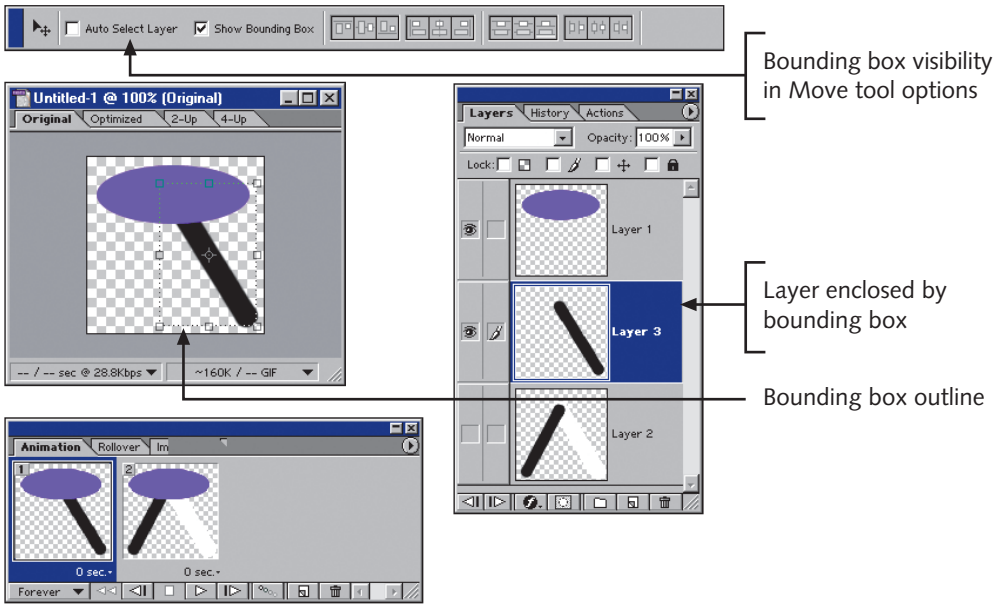

Figure 9-20 Bounding Box option

After optimizing the animation this way, use the Optimize palette to optimize the image as you would any other. Reduce the color and use dithering where appropriate. For most editing, you should use the Original view in the Image window because you can use all the layer-editing tools in this view. In the Optimize view, you can see the effects of different optimization settings, but some layer-editing tools are disabled.

When optimizing, make sure to use the Perceptual, Adaptive, or Selective color reduction method. This guarantees consistent color across the frames of the animation. Make sure also to use the GIF format optimization. Only GIF files support the animation discussed here, so optimizing the animation as a JPEG or PNG precludes the image from being used as an animation.

Designers used to optimize each frame individually, using a separate palette for each frame, and dither each frame slightly differently. This resulted in an unsightly flickering effect that detracted from the quality of the animation. Fortunately, in ImageReady there is only one palette used for all frames, and the dithering is automatically kept consistent across frames.

Saving Animations

You can save your animations as animated GIFs, QuickTime movies, or Photoshop files.

To save the file as an animated GIF, select Save Optimized As from the File menu and enter a filename. You can then use the image in a Web page as you would any other image.

In the HTML code, reference the image with an IMG tag. You can even use animated GIFs as background images, although this makes any text on the page difficult to read.

To save an animation as a QuickTime movie, select Export Original from the File menu to open the Export Original dialog box. Then click the Save as type list arrow and click QuickTime Movie. QuickTime must be installed on your computer for this option to work. Select a name and location, and adjust the compression settings. You can view the QuickTime movie in a special viewing application or in a browser that has the QuickTime plug-in installed. You also can import the animation into applications such as AfterEffects that support QuickTime.

Once the movie is in the QuickTime format, you can use software such as AfterEffects or Sparkle to convert the animation to other formats, such as MPEG. Users can view QuickTime movies in their browsers, but only if they have the proper plug-in installed. If they do not have the plug-in, they can download the movie and play it using any of a variety of free and commercial animation software.

You also can save the animation as a simple Photoshop (PSD) file. You cannot view the image in a browser, but you can preserve all layers and frames if you need to postpone completion of the project. Select Flatten Frames into Layers from the Animation palette menu. This creates a composite layer for each frame, containing all the layers visible for the frame.

Using Animation on the Web

Animated images can make a Web page dynamic without requiring interaction from the user. However, because animated images usually require a longer download time than do their static counterparts, you should use them only when the animation is necessary. For example, a good time to use an animated image is when you already have many colored images on a page and need to have one image in particular stand out from the rest. However, you use too many animated images, they will reduce the emphasis of the actual content of the page.

Animated images also draw more attention than do still images, which makes them distracting to some viewers. Animated GIFs are the graphical equivalent of the BLINK tag in HTML. Both flash and are very eye-catching, yet quickly become a nuisance. To avoid annoying your users, limit your animations to no more than one or two per page.

Creating Animated Icons

A colored graphical bullet has more impact than a bullet created in HTML. Similarly, an icon with the word "New!" has more impact than a bullet without any text. If you need bullets to draw attention to a specific piece of text, consider using an animated bullet.

A common animated bullet is an arrow pointing to the right, indicating that certain text is important. You should use such a bullet only when the text being emphasized is so

important that merely a bright icon is insufficient. Use an animated bullet to guarantee that the user notices it.

Creating News Bulletins

You can create a type of news ticker with an animated GIF that displays headlines of news items in a rectangle on a page, and then updates those items every few seconds, cycling through all the frames. This is an effective way to display dynamic content that changes over time without having to use client-side programming such as JavaScript.

Create an animated GIF with at least two frames of text over a background. Set each frame to delay for four or five seconds—longer for a lot of text. Each frame should be different, so dispose of the frames to the background. However, when working with text you can use very low color depth, which results in small files. For simple black-and-white text, you can use one-bit color depth. For smooth, anti-aliased text, use two- or three-bit color depth.

Graphical news tickers are not often used because when the text is changed a new image file must be created. However, if you do not have the resources to implement a Java- or DHTML-based news ticker, this is a simple, effective solution.

Creating Banner Ads

Perhaps the most common use of animated GIF images is in advertising. Most commercial Web pages display a banner ad at the top of the page, and often use smaller ads on the side. In the mid-1990s there were no standards for advertising on the Web, but now all advertisers and sites that display advertising agree on at least some standards. Some of these standards still vary from site to site, but consistent standards make it easier to measure the value of ads. These standards are discussed in the following sections.

Advertising on Web sites should be prominent so that users see the ad. The advertiser also should be confident that the message is clear. On the other hand, if the ad is too visible and eye-catching, it will draw attention away from the content of the page.

Web sites usually develop a list of constraints for advertisements that limit the impact of the ads. The designers who work for advertising companies then have to create attractive, sophisticated ads that do not violate the parameters set by the hosting Web site.

Using Conventional Dimensions

There are several standard sizes for Web ads, but the most common is the banner ad, which is always 468 pixels wide and 60 pixels high. Web designers agreed on this size because on a standard 72-dpi monitor the ad appears as 6½ inches wide and ⅝ of an inch high. If the Web page is printed on a standard 8½ × 11-inch sheet of paper, the entire ad prints even if the page has a one-inch margin.

Most Web pages are about 600 pixels wide, which leaves enough room for a 1½-inch logo and a standard banner ad across the top of the page.

Another common standard is for the half-banner ad, which is 234 pixels wide and 60 pixels high. Some sites display two half banners across the top of the page instead of one full one.

A common size for ads positioned on the side of a page is 125 pixels square. Many commercial sites use the convention of placing a column along the left side of their pages to contain navigation elements. A common size for these columns is 125 pixels because it is wide enough to display a few words on the same line, but not so wide that it interferes with the appearance of content in the main area of the page. Ads for these columns need to be 125 pixels wide in order to fit.

Constraining File Size

The sites that display ads shoulder the burden for the file size of advertisements. Even if the ad is loaded from a server other than the one that serves the Web page, the contents of the page might not render completely until the ads have finished downloading.

Sites that accept advertising usually limit the size of ads to about 15 K. Files this size take about six seconds to download using a 28.8 Kbps modem. Ads with larger file sizes take longer to load, and further delay the display of the actual page content. This 15 K size constraint forces designers to optimize their animations and be prudent about the amount of animation and effects they include. Some sites require that ads be as small as 12 or even 10 K.

Limiting Visual Impact

Another concern for sites that host ads is how the presence of the ads affects their own page design and layout. It can be frustrating for Web designers to create a unified color scheme and style, only to have it dominated by an ad at the top of the page that uses conflicting colors, sometimes producing a garish effect. In some cases, the ad is the most colorful element on the page and the only animated one. When this occurs, readers are often distracted from the actual content of the page. Users also can find animated ads annoying, and avoid sites that use too many of them.

To control the flashiness of ads, many Web sites place restrictions on animation in advertisements. A common restriction is on the amount of looping. Some sites allow only one loop per ad; some allow up to three or four loops. Because your ad might loop only once or a few times, be sure to place all relevant information in the last frame. For example, show the name of the product being advertised and the URL of the site. This way, when the animation freezes on the final frame, it still provides important information. Set a longer delay for the final frame than for the other frames. While the ad loops, users need time to read the text you placed there. A general rule of thumb is to allow one second for each line of text, and a delay of one to two seconds for the final frame of a banner ad.

Some sites also restrict the number of frames in an ad to four or five. This forces the designer to use just a few frames with long delays rather than many frames with short delays. This also results in less flashy ads.

Evaluating the Effectiveness of Banner Ads

Web ads are sold in blocks of a thousand, at a rate determined by the Web site that is paid to display the ads. Ad rates are measured in **CPM**s, which stands for "cost per mille" or "cost per thousand." CPMs can range from $1 to over $100 per thousand ads displayed. This means that displaying a single ad can cost as little as a tenth of a penny or as much as a dime.

Web advertising is less expensive than most other forms of advertising because creating and displaying an animated GIF is much simpler than creating a radio or TV spot, or a full-page glossy ad for a magazine. However, advertisers still need to know if their investment is worth the cost.

The way to measure the effectiveness of an ad on the Web is to measure the **click-through-rate** (**CTR**) of the ad. If 1000 people visit a Web page which displays a particular ad, and ten people click the ad, then the CTR for that ad is 10/1000 or 1%.

In the early days of the Web, CTRs were sometimes as high as 25%, meaning that one out of four people clicked ads. In the late 1990s, average CTRs decreased to 1% or 2% as people began ignoring banner ads. Today the average CTR is under 1%. Some use this to argue that advertising on the Web is a waste of money. However, even if people do not click the ad, they still see it and are aware of it to some degree. Advertising on the Web is becoming more like advertising in traditional media such as magazines or television. In these media, viewers generally cannot interact with an ad, and an ad provides branding instead of an actual link. The same is true for Web ads.

Using Banner-Swapping Services

Most people with small Web sites cannot afford to buy advertising on larger sites, and cannot display ads themselves because their sites are not well-trafficked. This creates a problem because the owners of the sites cannot advertise their products or services. One solution is to use a link exchange service. These services are usually free and provide a way to promote small Web sites. Small Web sites agree to display other sites' banner ads on their site, and the other sites do the same. In addition to promoting a site, banner ads can add authority to that Web site. A site without advertisements may be cleaner and more attractive, but a site with ads is clearly business-oriented. Displaying banner ads on your site can help distinguish your site from the many nonprofessional personal Web pages. Link exchange services also let you test different ad prototypes to see which have the highest CTR. You then can introduce high-CTR ads into paid campaigns without having to guess whether they will be successful.

Chapter Summary

- Animated Web graphics have four dimensions: width, height, (color) depth, and time.
- GIF animation displays a sequence of GIF images collected into one file. In ImageReady, you assign each image to a frame and organize the frames into a sequence.
- GIF animation has advantages over other formats because it does not require special plug-ins or coding to be displayed on Web pages.
- In ImageReady, each frame displays a combination of available layers. Each layer may be visible in multiple frames.
- Unlike most other animation formats, GIF animation is frame-based, not time-based.
- You can adjust the delay of each frame individually, and adjust how many times the sequence repeats.
- The frames and layers in an animation can be optimized like any other GIF image. You can optimize the animation by eliminating pixels that repeat across frames.
- Animation can easily be overused in Web pages; you should be discreet and use animation only when it serves a purpose.
- Most sites that accept advertising have strict guidelines about the banner ads they display.

Review Questions

1. What would be an appropriate format to use if you had to have 30 fps photographic-quality video?
   a. Flash
   b. GIF
   c. JPEG
   d. MPEG
2. Which format is not vector-based?
   a. Flash
   b. Java
   c. ShockWave
   d. Streaming Video

3. Which frame rate creates the most flicker?
   a. 2 fps
   b. 15 fps
   c. 24 fps
   d. 30 fps
4. What animation format does not require a browser plug-in or separate viewing application?
   a. Flash
   b. GIF
   c. MPEG
   d. QuickTime
5. Which of the following sentences about creating animations in ImageReady is true?
   a. Duplicating a frame adds a new frame and new layers.
   b. Duplicating a frame adds a new frame but cannot add new layers.
   c. Pasting a frame adds a new frame and new layers.
   d. Pasting a frame adds a new frame but cannot add new layers.
6. What is NOT a reason to preview animations in a Web browser?
   a. Previewing in ImageReady does not always accurately display animation looping.
   b. Previewing in ImageReady does not always accurately display frame delay.
   c. Previewing in ImageReady does not display frame disposal.
   d. Previewing in ImageReady does not display optimization information.
7. What is NOT a way to prevent the contents of a layer from being displayed as part of an animation frame?
   a. Delete the layer.
   b. Deselect the layer.
   c. Deselect the visibility icon in the layer.
   d. Set the opacity of the layer to 0%.
8. Which of the following layer changes affect all frames that call the layer and cannot be used to animate across frames?
   a. Layer styles
   b. Opacity
   c. Position
   d. Scale

9. To what does frame delay refer?
   a. It is another name for frame rate.
   b. The number of frames per second
   c. The number of loops per second
   d. The number of seconds per frame
10. What is the fastest frame rate possible with GIF animation?
   a. 30 fps
   b. 72 fps
   c. 100 fps
   d. The processing speed of the computer
11. What is tweening?
   a. Duplicating keyframes and placing the new keyframes in between the new frames
   b. Duplicating intermediate layers
   c. Combining layers by averaging their settings
   d. Creating new frames that show the same layers as the keyframes, and then averaging the layer settings
12. What optimization settings are permitted for GIF animations?
   a. GIF only
   b. GIF or JPEG
   c. GIF or PNG
   d. GIF or PNG-8
13. Which frame disposal method produces the smallest files?
   a. Automatic
   b. Bounding Box
   c. Do not Dispose
   d. Restore to Background
14. What frame disposal method must you use to use the redundant pixel removal optimization?
   a. Automatic
   b. Bounding Box
   c. Do not Dispose
   d. Restore to Background

15. What color reduction method should you use when optimizing animated GIFs?
    a. Diffusion
    b. Perceptual, Selective, or Adaptive
    c. System colors
    d. Web palette
16. How do you display an animated GIF image in a Web page?
    a. By streaming the animation file
    b. With a browser plug-in
    c. With a separate image-viewing application
    d. With a standard IMG tag in HTML
17. What is an appropriate frame delay for graphical news tickers?
    a. Half a second per frame
    b. One second per frame
    c. Two seconds per frame
    d. Four seconds per frame
18. What are the dimensions of conventional banner ads?
    a. 460 × 68
    b. 468 × 60
    c. 480 × 60
    d. 488 × 68
19. What is NOT a typical constraint placed on banner ads?
    a. No larger than 12 K
    b. No looping
    c. No more than four frames
    d. No transparency
20. What is a typical click through rate (CTR) for banner ads?
    a. Below 0.1%
    b. Below 1%
    c. Below 10%
    d. Below 25%

Hands-on Projects

Project 1: Creating an Animation from Multiple Images

You have a 3-D modeling and animation program that exports separate files for each frame of the animation. Collect these files and create an animated GIF from them.

Complete these steps:

1. On your hard drive, create a new folder named **project_9-1**.
2. In ImageReady, click **File** on the menu bar, point to **Import**, and then click **Folder as Frames**. In the Browse dialog box, locate and select the **cube** folder on the Data Disk and then click **OK**. This creates three frames and three layers in a new ImageReady file.
3. Select **frame 1** and make sure that the visibility icon is showing for only the bottom layer in the Layers palette.
4. Select **frame 2** and make sure the visibility icon is showing for only the middle layer.
5. Select **frame 3** and make sure the visibility icon is showing for only the top layer.
6. Make sure the Looping Option is set to Forever.
7. Select all **three frames** and set the delay value to **0.1** seconds.
8. In the Optimize palette, select the preset named **GIF 128 No Dither**.
9. Open the Animation palette menu and click **Optimize Animation**. Check both boxes in the Optimize Animation dialog box, if necessary, and click **OK**.
10. Preview the animation in a browser to check the optimization and speed.
11. Click the **File** menu, and then select **Save Optimized As**.
12. Save the animation as **cube.gif** in the project_9-1 folder.

Project 2: Animating Multiple Layers

Create an animation of a jittery house from a file with multiple layers.

Complete these steps:

1. In ImageReady, open image file **house.psd** from the Data Disk.
2. Create two new frames. Make sure the visibility for all layers is turned on for all frames.
3. Select **frame 1**. Select the layer named **door** and in the Image window, move it near the lower-left of the yellow square.
4. Move the **window** layer near the center-right of the yellow square. Move the **roof** layer near the top-center of the yellow square.

5. Select **frames 2** and **3** and repeat the process described in Step 4. Do not worry about placing the elements exactly as you did for frame 1. In frame 3, place the elements so that their edges line up exactly with the edges of the yellow square.
6. Select **all frames** and set the delay value to **0.1** seconds.
7. Set the looping to **5** times.
8. In the Optimize palette, select the preset named **GIF 64 No Dither**.
9. Open the Animation palette menu, click **Optimize Animation**, and accept both options.
10. Preview the animation in a browser to check the optimization and speed.
11. Click the **File** menu, and then select **Save Optimized As**.
12. Save the animation as **house.gif** in a new folder named **project_9-2**.

Project 3: Creating a Fading Text Animation

You want to animate a simple text image, but it needs to fade in and out, rather than move. You could use the BLINK tag in HTML, but you want a more subtle effect.

Complete these steps:

1. In ImageReady, create an image that is **125** pixels wide and **50** pixels high.
2. Use the Type tool to add the text **E-Mail Us!** in blue using a bold serif font, and using a size that fits within the image.
3. Click the **New Frame** button to duplicate the frame.
4. Select the **second frame** and set the opacity of the text layer to **40%**.
5. Click the **Tween** button. In the Tween dialog box, select **All Layers** and make sure Opacity is selected. Set the Tween with option to **Previous Frame**. Set Frames to Add to **2**.
6. Click **OK**. Two new frames are added that display the same layer at 80% and 60% opacity.
7. Select the **two middle frames** and click the **New Frame** button to duplicate the frames.
8. Drag these **new frames** to the far right of the Animation palette, reversing their order. The opacity of the frames should be, in order: 100%, 80%, 60%, 40%, 60%, 80%.
9. Select **all the frames** and set the delay value to **0.2** seconds.
10. In the Optimize palette, set the format to **GIF**, the Colors to **8**, and the dither to **Diffusion**.
11. In the Animation palette menu, select **Optimize Animation** and accept both options.
12. Preview the animation in a Web browser and make any changes, if necessary.
13. Click **File** on the menu bar, click **Save Optimized As**, and save the animation as **email.gif** in a new folder named **project_9-3**.

Project 4: Creating a Rotating Animation

You want to create another simple animation. This one will rotate rather than change position, so you need multiple layers.

Complete these steps:

1. In ImageReady, open image file **lightbulb.tif** from the Data Disk.
2. Duplicate the background layer and name the new layer **lightbulb 1**.
3. Create a new layer behind it and name this layer **glow**.
4. Set the foreground color to **pure yellow (#ffff00)**.
5. Select the **Paintbrush** tool and select a **feathered brush** of about **65** pixels in diameter.
6. Click once in the center of the glow layer to create a yellow spot behind the lightbulb image.
7. Select **Layer 1** in the Layers palette.
8. Click **Edit** on the menu bar, point to **Transform**, and then click **Rotate**. A transformation box appears around the lightbulb image.
9. Drag the **anchor point** so that it is over the center of the yellow spot.
10. Drag a **corner tab** of the transformation box to rotate the lightbulb image by about 10 degrees. Double-click **inside the box** to set the transformation.
11. Select the layer named **lightbulb 1** in the Layers palette and rotate it the same way as you did in Step 10, but in the opposite direction.
12. Create a new frame.
13. Select the **first frame** and deselect the **visibility icon** for the Layer 1 layer.
14. Select the **second frame** and deselect the **visibility icon** for the lightbulb 1 layer.
15. Click the **Play** button in the Animation palette. The lightbulb image swings back and forth centered around the yellow glow.
16. Select **both frames** and set the delay value to **0.3** seconds.
17. In the Optimize palette, select the preset named **GIF 64 No Dither**.
18. In the Animation palette menu, select **Optimize Animation** and accept both options.
19. Click **File** on the menu bar, click **Save Optimized As** and save the animation as **idea.gif** in a new folder named **project_9-4**.

Project 5: Simulating Acceleration

You want an animation of a ball bouncing, but you want it to accelerate as it rises and falls. You need to adjust the frames and layers to simulate acceleration.

Complete these steps:

1. In ImageReady, open image file **ball.gif** from the Data Disk.

2. Use the Move tool in the Image window to drag the **ball** to the bottom of the image.
3. Duplicate the frame in the Animation palette.
4. Select the **second frame** and use the Move tool to drag the **ball** to the top of the image.
5. Click the **Tween** button and add **3** new frames.
6. Select the **first** and **last frames**, but not the ones between them, and click the **Tween** button again to add **3** more frames at the end of the animation.
7. Play the animation. The ball should move up and down at a constant speed.
8. Set the delay of frame 1 to **No Delay**.
9. Set the delay of frames 2 and 8 to **0.1** seconds.
10. Set the delay of frames 3 and 7 to **0.2** seconds.
11. Set the delay of frame 5 to **0.5** seconds.
12. Delete **frames 4** and **6**.
13. Select **frame 1**. Click **Layer** on the menu bar, point to **Layer Style**, and then click **Drop Shadow**. In the Layer Style palette, set the Distance to **8**.
14. In the Optimize palette, select the preset named **GIF 32 No Dither**.
15. In the Animation palette menu, select **Optimize Animation** and accept both options.
16. Preview the animation in a browser. The ball should appear to move quickly near the bottom of the image and to move more slowly near the top.
17. Click **File** on the menu bar, click **Save Optimized As**, and save the animation as **ball_bounce.gif** in a new folder called **project_9-5**.

Project 6: Creating a Graphical News Ticker

You want to highlight some news headlines on your home page, but do not want to take up more than about one square inch to do so. Create a slide show of images containing text to use as a space-saving news ticker.

Complete these steps:

1. In ImageReady, create an image that is **96** pixels wide and **96** pixels high.
2. Select the **Type** tool and select a **serif font** of **14 p**. Set the foreground color to **black (#000000)**.
3. Click in the Image window and type **New software products in our reviews section!** Add blank lines to make the text fit on four lines. Use the Move tool to center the text layer in the image.
4. Open the Animation palette menu and make sure that the New Layers Visible In All Frames option is deselected. Also make sure the Add Layer To New Frames option is deselected.

5. Select the **frame** and duplicate it twice by clicking the **Duplicate Frame** button.
6. Select the **layer** and duplicate it twice by selecting **Duplicate Layer** in the Layers palette menu.
7. Select the **first frame**; only the bottom text layer should have visibility turned on.
8. Select the **second frame**. Set the visibility in the Layers palette so that only the middle text layer is visible.
9. Select the **middle text layer**, and select the **Type** tool. Edit the text in the middle text layer to read **New features added to our community forum!**
10. Select the **third frame**; only the top text layer should have visibility turned on.
11. Select the **top text layer**. Edit the text in the top text layer to read **New images in our image library!**
12. Select **all frames** and set the delay value to **3** seconds for each frame.
13. Set looping to **Forever**.
14. In the Optimize palette, select the preset named **GIF 128 No Dither**. Then reduce the colors to **8**.
15. In the Animation palette menu, select **Optimize Animation** and accept both options.
16. Preview the news ticker in a Web browser to make sure the animation plays properly.
17. Click **File** on the menu bar, click **Save Optimized As**, and save the animation as **news.gif** in a new folder named **project_9-6**.

Project 7: Creating a Banner Ad

Create a simple five-frame banner using text elements.

Complete these steps:

1. In ImageReady, create an image that is **468** pixels wide and **60** pixels high with a **white** background.
2. Convert the background layer to a normal layer by selecting **Layer Options** from the Layers palette menu. Change the name of the layer to **background**. Click **OK**.
3. Set the foreground color to **dark teal** (**#003366**). Use the Paint Bucket tool to fill the layer.
4. Create four new layers. Name them **art**, **design**, **graphics**, and **url**.
5. Set the foreground color to **pure yellow** (**#ffff00**). Select the **art** layer. Select the **Type** tool.
6. Use a **24 px bold serif font** and add the word **Art** to the layer.
7. Click **Layer** on the menu bar, point to **Rasterize**, and then click **Type**. This renders the vector-based text into pixels.
8. Move the text layer to the upper-left of the image.

9. Select the **design** layer. Add the word **Design** and rasterize the text. Drag the **text** to the top-center of the image.
10. In the graphics layer, add the word **Graphics** and drag it to the upper-right of the image. Rasterize the layer.
11. Set the foreground color to **pure red** (**#ff0000**). Using a sans serif text such as Arial or Helvetica, add the **URL** for your site or your class's Web site to the URL layer. Drag it to the bottom center of the image.
12. Duplicate the frame. Select the **first frame** and select the **background layer**. Set the opacity of this layer to **60%**.
13. Select **both frames** and click the **Tween** button to add **3** intermediate frames.
14. Select the **last frame** and set the opacity of the art, design, and graphics layers to **80%**.
15. Select the **first frame** and adjust the visibility icons in the Layers palette so that only the background and art layers are visible.
16. Select the **second frame** and adjust the visibility icons so that only the background and design layers are visible.
17. Select the **third frame** and adjust the visibility icons so that only the background and graphics layers are visible.
18. Select the **fourth frame** and adjust the visibility icons so that only the background and url layers are visible.
19. Select the **fifth frame** and make all layers visible.
20. Select the **first four frames** and set the delay value to **1** second.
21. Select the **last frame** and set the delay value to **2** seconds.
22. Set the looping to **4** times.
23. In the Optimize palette, select the preset named **GIF 128 No Dither**.
24. In the Animation palette menu, select **Optimize Animation** and accept both options.
25. Preview the banner in a Web browser to make sure the animation plays properly.
26. Click **File** on the menu bar, click **Save Optimized As**, and save the animation as **ad.gif** in a new folder named **project_9-7**. Also save the unoptimized file, including all layer information, as **ad2.psd** in the same folder.

Project 8: Manually Optimizing an Animation

All the previous projects for this chapter have used the default Automatic frame disposal method. This usually produces adequately small files. You can sometimes attain even smaller files by not disposing of frames and manually blocking out pixels that change between frames.

Complete these steps:

1. In ImageReady, create an image that is **60** pixels square.

2. Set the foreground color to **black**.
3. Use the Elliptical Marquee tool to create a circular selection area that fits the edges of the image area.
4. Stroke the edges with **black** to make a **2-pixel-wide black ring**.
5. Create four empty layers. Name them **12**, **3**, **6**, and **9**.
6. Duplicate the frame so that you have a total of four frames.
7. Select the **first frame** and set the visibility so that only the background and the 12 layer are showing. Select the **12 layer**.
8. Select the **Paintbrush** tool and select a **nonfeathered brush** that is about **5** pixels in diameter.
9. Draw a **short, black, vertical line** inside the ring near the top of the image.
10. Select the **second frame** and set the visibility so that only the background and the 3 layer are showing. Select the **3** layer.
11. Draw a **short horizontal line** inside the ring near the right side of the image.
12. Select the **third frame** and set the visibility so that only the background and the 6 layer are showing. Select the **6** layer.
13. Draw a **short vertical line** inside the ring near the bottom of the image.
14. Select the **fourth frame** and set the visibility so that only the background and the 9 layer are showing. Select the **9** layer.
15. Draw a **short horizontal line** inside the ring near the left side of the image.
16. Select **all frames** and set the frame disposal method to **Automatic**.
17. In the Optimize palette, select the preset named **GIF 128 No Dither**.
18. In the Animation palette menu, select **Optimize Animation** and accept both options.
19. Preview the animation in a Web browser. The file size of the animation will be a few kilobytes.
20. You can reduce the file size. Select **all frames** and set the frame disposal method to **Do Not Dispose**.
21. Preview the animation in a Web browser. The size of the animation file will be about half its original size. However, the four lines persist when their frames appear.
22. Set the foreground color to **white** and select a **Paintbrush tool brush** that is slightly larger than the one you used before.
23. Select the **second frame** and select the **3** layer. With the Paintbrush, paint over the area occupied by the vertical line in the 12 layer. Temporarily make the 12 layer visible so that you can see what you are doing. But make sure to paint inside the 3 layer.
24. Select the **third frame** and select the **6** layer. With the Paintbrush, paint over the area occupied by the lines in the 12 and 3 layers.

25. Select the **fourth frame** and select the **9** layer. With the Paintbrush, paint over the area occupied by the lines in the 12, 3, and 6 layers.
26. Preview the animation in a Web browser. The size of the animation file will be larger than before, but it will be still about two-thirds of the file size using automatic optimization.
27. Click **File** on the menu bar, click **Save Optimized As**, and save the animation as **clock.gif** in a new folder named **project_9-8**.

CASE PROJECT

Create two animated ads for your Web site. One should be 468 × 60 pixels, and the other should be 125 × 125 pixels. Both should be under 10 K each. They can have as many frames as you need, but should loop a finite number of times. The last frame in both animations should contain all the important information about your Web site, including a very brief description and the URL. The last frame of each animation should have a delay of at least a second and a half.